

**Notice of Allowability**

Application No.

10/757,748

Applicant(s)

BAXTER ET AL.

Examiner

William K Cheung

Art Unit

1713

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 1/15/2004.
2. ☒ The allowed claim(s) is/are 1-6.
3. ☒ The drawings filed on 15 January 2004 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
  1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date 0329
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_.
7. ☐ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

## DETAILED ACTION

### *Allowances*

1. Claims 1-6 are allowed.

2. The following is an examiner's statement of reasons for allowance:

As of the date of this office action, the examiner has not located or identified any reference that can be used singularly or in combination with another reference including the closest prior art of Holub et al. (US 5,811,616) and Nissfolk et al. (US 5,767,334) to render the present invention anticipated or obvious to one of ordinary skill in the art.

*The invention of claims 1-5 relates to a method for treating a catalytically formed crude polyolefin product containing residual catalyst to avoid further reaction in the product and remove residual catalyst therefrom, said method comprising:*

*intimately admixing crude residual catalyst containing polyolefin product and a first aqueous media containing a catalyst killing agent to thereby form a first intimately admixed two phase, gravity separable mixture;*

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***introducing said first two phase mixture into a first settlement zone and allowing the same to settle in said first zone under the influence of gravity to present an upper partially washed crude polyolefin product phase and a first lower aqueous phase containing dissolved catalyst salts;***

***withdrawing said first lower aqueous phase from said first settlement zone and recirculating a first portion thereof and introducing the same into said first two phase mixture for inclusion as part of said first aqueous media;***

***directing a second portion of said first lower aqueous phase to a drain for disposal or reclamation;***

***introducing a first quantity of make-up water into said first two phase mixture for inclusion as part of said first aqueous media;***

***withdrawing said partially washed crude polyolefin product phase from said first settlement zone and intimately admixing the same with a second aqueous media to thereby form a second intimately admixed two phase, gravity separable mixture;***

***introducing said second two phase admixture into a second settlement zone and allowing the same to settle in said second zone under the influence of gravity to present an upper more fully washed crude polyolefin product phase and a second lower aqueous phase;***

***withdrawing said second lower aqueous phase from said second settlement zone and recirculating a first portion thereof and introducing the same into said second two phase mixture for inclusion as part of said second aqueous media;***

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**directing a second portion of said second lower aqueous phase to a drain for disposal or reclamation;**

**removing said more fully washed crude polyolefin product phase from said second settlement zone; and**

**introducing a second separate quantity of make-up water into said second two phase mixture for inclusion as part of said second aqueous media.**

The invention of claim 6 relates to a **method for washing a crude polyolefin product to remove residual catalyst therefrom**, said method comprising:

**forming a first intimately admixed two phase admixture comprising a crude olefin polymerization product containing residual catalyst and a first aqueous media containing a catalyst killing agent;**

**introducing said first two phase admixture into a first settlement zone and causing said first two phase admixture to settle in said zone under the influence of gravity to present an upper partially washed crude polyolefin product phase and a first lower aqueous phase containing dissolved catalyst salts;**

**removing said first lower aqueous phase from said first settlement zone and recirculating a first portion thereof for inclusion in said first two phase admixture as part of said first aqueous media;**

**directing a second portion of said first lower aqueous phase to a drain for disposal or reclamation;**

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***removing said partially washed crude polyolefin product phase from said first settlement zone and intimately admixing the same with a second aqueous media to thereby form a second two phase admixture;***

***introducing said second two phase admixture into a second settlement zone and causing said second two phase admixture to settle therein under the influence of gravity to present an upper intermediately washed crude polyolefin product phase and a second lower aqueous phase;***

***removing said second lower aqueous phase from said second settlement zone and recirculating a first portion thereof for inclusion in said second two phase admixture as part of said second aqueous media;***

***directing a second portion of said second lower aqueous phase to a drain for disposal or reclamation;***

***removing said intermediately washed crude polyolefin product phase from said second settlement zone and admixing the same with a third aqueous media to thereby form a third two phase admixture;***

***introducing said third two phase admixture into a third settlement zone and causing said third two phase admixture to settle therein under the influence of gravity to present an upper more fully washed crude polyolefin product phase and a third lower aqueous phase;***

***removing said third lower aqueous phase from said third settlement zone and recirculating a first portion thereof for inclusion in said third two phase admixture as part of said third aqueous media;***

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***recirculating a second portion of said third lower aqueous phase for inclusion in said second intimately admixed two phase admixture as part of said second aqueous media;***

***introducing a first quantity of make-up water into said first intimately admixed two phase admixture for inclusion therein as part of said first aqueous media; and***

***introducing a second separate quantity of make-up water into said third intimately admixed two phase admixture for inclusion therein as part of said third aqueous media.***

The closest prior art, Holub et al. (abstract) and Nissfolk et al. (abstract), each disclose methods for removing catalyst from polyolefin crude product from a polymerization process catalyzed by  $\text{BF}_3$  through vaporization or distillation. However, Holub et al. and Nissfolk et al. are silent on a method which involves multiple washing and separation steps for removing residual catalyst from the crude polymer product. Therefore, it would not be apparent to one of ordinary skill in art to use the catalyst removal teachings in Holub et al. or in Nissfolk et al., each individually or in combination to obtain the invention of claims 1-6. Claims 1-6 are allowed.

In light of the above discussion, it is evident as to why the present claims are patentable over the prior art.

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Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, and to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### **Conclusion**

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to William K Cheung whose telephone number is (571) 272-1097. The examiner can normally be reached on Monday-Friday 9:00AM to 2:00PM; 4:00PM to 8:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David WU can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'William K. Cheung', with a stylized, flowing script.

William K. Cheung

Primary Patent Examiner

May 16, 2004